Applicant : Sampath et al.
Serial No. : 10/734,440
Filed : December 11, 2003
Page : 2 of 24

Attorney's Docket No.: MP0389 / 13361-0061001

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1.   (Currently amended) A method performed by at least one device of a communication system, the method comprising:

determining a signal quality value from received packets transmitted at a first data transmission rate;

determining a packet loss indicator value from transmitted packets transmitted at a second different data transmission rate; and

selecting a third different data transmission rate in response to the signal quality value determined from the received packets transmitted at the first data transmission rate and the packet loss indicator value determined from the transmitted packets transmitted at the second different data transmission rate, wherein the selecting includes selecting the third different data transmission rate from a plurality of available data transmission rates, and each of the plurality of available data transmission rates is different from the first data transmission rate and the second different data transmission rate; and

transmitting packets at the third different data transmission rate.

2.   (Previously Presented) The method of claim 1, wherein the signal quality value is selected from an RSSI (Received Signal Strength Indicator) value, an SNR (signal to noise ratio) value, an SINR (signal to interference noise ratio) value, and a SQM (signal quality measure) value, the SQM value comprising a mean of the SNRs across all of a plurality of tones.

Applicant : Sampath et al.   Attorney's Docket No.: MP0389 / 13361-0061001
Serial No. : 10/734,440
Filed : December 11, 2003
Page : 3 of 24

3. (Original) The method of claim 1, wherein the packet loss indicator value is selected from a retry counter value, a bit-error update value, a packet error update value, a symbol error update value, and a CRC (Cyclic Redundancy Check) indicator value.

4. (Canceled)

5. (Currently amended) The method of claim 1, further comprising:

generating a confidence value for each of a plurality of available data transmission rates using the signal quality value and the packet loss indicator value.

6. (Previously Presented) The method of claim 5, further comprising:

generating an adjustment value for the signal quality value from the packet loss indicator value.

7. (Previously Presented) The method of claim 6, wherein the signal quality value comprises an RSSI value.

8. (Previously Presented) The method of claim 7, further comprising:

generating an average received signal strength indicator (RSSI$_{avg}$) value, and

wherein the adjustment value comprises a Δ_{RSSI} value, the Δ_{RSSI} value comprising an adjustment to the RSSI$_{avg}$ value.

9. (Currently amended) The method of claim 8, wherein said generating the confidence value comprises solving the equation:

Confidence[j] = RSSI$_{avg}$ - RSSI$_{TH}$[j] - Δ_{RSSI} ,

where RSSI$_{TH}$[j] comprises a nominal received signal strength value associated with a data transmission rate [j] in a table.

Applicant : Sampath et al.
Serial No. : 10/734,440
Filed : December 11, 2003
Page : 4 of 24

Attorney's Docket No.: MP0389 / 13361-0061001

10. (Currently amended) The method of claim 9, wherein said selecting the third different data <u>transmission</u> rate comprises selecting a data <u>transmission</u> rate associated with a positive confidence value.

11. (Currently amended) The method of claim 9, wherein said selecting the third different data <u>transmission</u> rate comprises selecting a data <u>transmission</u> rate associated with a lowest positive confidence value.

12. (Original) The method of claim 6, further comprising:
updating the adjustment value in response to the packet loss indicator value indicating a maximum failure value corresponding to an excessive number of failed packet transmissions.

13. (Original) The method of claim 6, further comprising:
updating the adjustment value in response to the packet loss indicator value indicating a maximum success value corresponding to an excessive number of success packet transmissions.

14. (Currently amended) The method of claim 1, further comprising:
increasing a transmit power for transmitting packets in response to the selected data <u>transmission</u> rate falling below a first threshold data <u>transmission</u> rate; and
decreasing the transmit power in response to the selected data <u>transmission</u> rate exceeding a second threshold data <u>transmission</u> rate.

15. (Currently amended) The method of claim 14, wherein the second threshold data <u>transmission</u> rate is greater than the first threshold data <u>transmission</u> rate.

16. (Currently amended) The method of claim 1, further comprising:
decreasing the selected data <u>transmission</u> rate in response to the packet loss indicator value increasing.

Applicant : Sampath et al.   Attorney's Docket No.: MP0389 / 13361-0061001
Serial No. : 10/734,440
Filed   : December 11, 2003
Page   : 5 of 24

17.   (Currently amended) The method of claim 16, wherein said decreasing comprises decreasing the selected data transmission rate in response to data transmission rate values in a table indexed by available data transmission rates and packet loss indicator values.

18.   (Currently amended) The method of claim 1, further comprising:

selecting a fourth data transmission rate value directly from the packet loss indicator value in response to the signal quality value falling below a minimum signal quality value.

19.   (Currently amended) An apparatus comprising:

a transceiver including:

a transmit section operative to transmit packets at a first data transmission rate and to determine a packet loss indicator value[[,]];

a receive section operative to receive packets at a second different data transmission rate and to determine a signal quality value from said received packets[[,]]; and

a rate selector operative to select a third different data transmission rate in response to the signal quality value determined from the packets received at the second different data transmission rate and the packet loss indicator value determined from the packets transmitted at the first data transmission rate, wherein the rate selector selects the third different data transmission rate from a plurality of available data transmission rates, and each of the plurality of available data transmission rates is different from the first data transmission rate and the second different data transmission rate.

20.   (Previously Presented) The apparatus of claim 19, wherein the signal quality value is selected from an RSSI (Received Signal Strength Indicator) value, an SNR (signal to noise ratio) value, an SINR (signal to interference noise ratio) value, and a SQM (signal quality measure) value, the SQM value comprising a mean of the SNRs across all of a plurality of tones.

Applicant : Sampath et al.
Serial No. : 10/734,440
Filed : December 11, 2003
Page : 6 of 24

Attorney's Docket No.: MP0389 / 13361-0061001

21.   (Original) The apparatus of claim 19, wherein the packet loss indicator value is selected from a retry counter value, a bit-error update value, a packet error update value, a symbol error update value, and a CRC (Cyclic Redundancy Check) indicator value.

22.   (Currently amended) The apparatus of claim 19, further comprising:

a table including the plurality of available data transmission rates, each available data transmission rate associated with a nominal signal quality value.

23.   (Currently amended) The apparatus of claim 19, wherein the rate selector is further operative to generate a confidence value for each of a plurality of available data transmission rates using the signal quality value and the packet loss indicator value.

24.   (Previously Presented) The apparatus of claim 23, further comprising:

a retry processor operative to generate an adjustment value for the signal quality value from the packet loss indicator value.

25.   (Previously Presented) The apparatus of claim 24, wherein the signal quality value comprises an RSSI value.

26.   (Previously Presented) The apparatus of claim 25, further comprising a filter to generate an average received signal strength indicator ($RSSI_{avg}$) value, and

wherein the adjustment value comprises a Δ_{RSSI} value, the Δ_{RSSI} value comprising an adjustment to the $RSSI_{avg}$ value.

27.   (Currently amended) The apparatus of claim 26, wherein the rate selector is further operative to generate the confidence value by solving the equation:

Confidence[j] = $RSSI_{avg}$ - $RSSI_{TH}$[j] - Δ_{RSSI} ,

where $RSSI_{TH}$[j] comprises a nominal received signal strength value associated with a data transmission rate [j] in a table.

28.   (Currently amended) The apparatus of claim 27, wherein the rate selector is operative to select a third different data transmission rate associated with a positive confidence value.

29.   (Currently amended) The apparatus of claim 27, wherein the rate selector is operative to select a third different data transmission rate associated with a lowest positive confidence value.

30.   (Currently amended) The apparatus of claim 24, further comprising a state machine operative to monitor the packet loss indicator value and determine whether a current data transmission rate causes an excessive number of failed packet transmissions or an excessive number of successful packet transmissions.

31.   (Currently amended) The apparatus of claim 30, wherein the rate selector is further operative to update the adjustment value in response to an output of the state machine indicating that the current data transmission rate causes an excessive number of failed packet transmissions or an excessive number of successful packet transmissions.

Applicant : Sampath et al.
Serial No. : 10/734,440
Filed : December 11, 2003
Page : 8 of 24

Attorney's Docket No.: MP0389 / 13361-0061001

32. (Currently amended) The apparatus of claim 19, further comprising:

a power adaptor operative to increasing a transmit power of the transmit section in response to the selected data transmission rate falling below a first threshold data transmission rate and to decrease the transmit power in response to the selected data transmission rate exceeding a second threshold data transmission rate.

33. (Currently amended) The apparatus of claim 32, wherein the second threshold data transmission rate is greater than the first threshold data transmission rate.

34. (Currently amended) The apparatus of claim 19, wherein the rate selector is further operative to decrease the selected data transmission rate in response to the packet loss indicator value increasing.

35. (Currently amended) The apparatus of claim 34, further comprising a table indexed by available data transmission rates and packet loss indicator values, and

wherein the rate selector is operative to decrease the selected data transmission rate in response to data transmission rate values in said table.

36. (Currently amended) The apparatus of claim 19, wherein the rate selector is further operative to select a fourth data transmission rate value directly from the packet loss indicator value in response to the signal quality value falling below a minimum signal quality value.

37.　　　(Currently amended) An apparatus comprising:

a transceiver including:

　　　　a transmit section including:

　　　　　　　means for transmitting packets at a first data transmission rate, and

　　　　　　　means for determining a packet loss indicator value from the transmitted

　　　　packets[[,]]; and

　　　　a receive section including:

　　　　　　　means for receiving packets at a second different data transmission rate,

　　　　and

　　　　　　　means for determining a signal quality value from the received

　　　　packets[[,]]; and

　　　　means for selecting a third different data transmission rate in response to the

　　　signal quality value determined from the received packets received at the second different

　　　data transmission rate and the packet loss indicator value determined from the transmitted

　　　packets transmitted at the first data transmission rate, wherein the selecting includes

　　　selecting the third different data transmission rate from a plurality of available data

　　　transmission rates, and each of the plurality of available data transmission rates is

　　　different from the first data transmission rate and the second different data transmission

　　　rate.

38.　　　(Previously Presented) The apparatus of claim 37, wherein the signal quality

value is selected from an RSSI (Received Signal Strength Indicator) value, an SNR (signal to

noise ratio) value, an SINR (signal to interference noise ratio) value, and a SQM (signal quality

measure) value, the SQM value comprising a mean of the SNRs across all of a plurality of tones.

39.　　　(Original) The apparatus of claim 37, wherein the packet loss indicator value is

selected from a retry counter value, a bit-error update value, a packet error update value, a

symbol error update value, and a CRC (Cyclic Redundancy Check) indicator value.

40. (Currently amended) The apparatus of claim 37, further comprising:

a table including the plurality of available data <u>transmission</u> rates, each available data transmission rate associated with a nominal signal quality value.

41. (Currently amended) The apparatus of claim 37, further comprising:

means for generating a confidence value for each of a plurality of available data transmission rates using the signal quality value and the packet loss indicator value.

42. (Previously Presented) The apparatus of claim 41, further comprising:

means for generating an adjustment value for the signal quality value from the packet loss indicator value.

43. (Previously Presented) The apparatus of claim 42, wherein the signal quality value comprises an RSSI value.

44. (Previously Presented) The apparatus of claim 43, further comprising:

means for generating an average received signal strength indicator ($RSSI_{avg}$) value, and wherein the adjustment value comprises a Δ_{RSSI} value, the Δ_{RSSI} value comprising an adjustment to the $RSSI_{avg}$ value.

45. (Currently amended) The apparatus of claim 44, further comprising:

means for generating the confidence value by solving the equation:

$Confidence[j] = RSSI_{avg} - RSSI_{TH}[j] - \Delta_{RSSI}$,

where $RSSI_{TH}[j]$ comprises a nominal received signal strength value associated with a data <u>transmission</u> rate [j] in a table.

Applicant : Sampath et al.
Serial No. : 10/734,440
Filed : December 11, 2003
Page : 11 of 24

Attorney's Docket No.: MP0389 / 13361-0061001

46. (Currently amended) The apparatus of claim 45, further comprising:

means for selecting a third different data transmission rate associated with a positive confidence value.

47. (Currently amended) The apparatus of claim 45, further comprising:

means for selecting a third different data transmission rate associated with a lowest positive confidence value.

48. (Currently amended) The apparatus of claim 42, further comprising:

means for monitoring the packet loss indicator value; and

means for determining whether a current data transmission rate causes an excessive number of failed packet transmissions or an excessive number of successful packet transmissions.

49. (Currently amended) The apparatus of claim 48, further comprising:

means for updating the adjustment value in response to the current data transmission rate causing an excessive number of failed packet transmissions or an excessive number of successful packet transmissions.

50. (Currently amended) The apparatus of claim 37, further comprising:

means for increasing a transmit power of the transmit section in response to the selected data transmission rate falling below a first threshold data transmission rate and to decrease the transmit power in response to the selected data transmission rate exceeding a second threshold data transmission rate.

51. (Currently amended) The apparatus of claim 50, wherein the second threshold data transmission rate is greater than the first threshold data transmission rate.

Applicant : Sampath et al.
Serial No. : 10/734,440
Filed : December 11, 2003
Page : 12 of 24

Attorney's Docket No.: MP0389 / 13361-0061001

52. (Currently amended) The apparatus of claim 37, further comprising:

means for decreasing the selected data transmission rate in response to the packet loss indicator value increasing.

53. (Currently amended) The apparatus of claim 52, further comprising:

a table indexed by available data transmission rates and packet loss indicator values; and

means for decreasing the selected data transmission rate in response to data transmission rate values in said table.

54. (Currently amended) The apparatus of claim 37, further comprising:

selecting a fourth data transmission rate value directly from the packet loss indicator value in response to the signal quality value falling below a minimum signal quality value.

55. (Currently amended) A computer-readable medium having instructions stored thereon, which, when executed by a processor, causes the processor to perform operations comprising:

determining a signal quality value from received packets transmitted at a first data transmission rate;

determining a packet loss indicator value from transmitted packets transmitted at a second different data transmission rate;

selecting a third different data transmission rate in response to the signal quality value determined from the received packets transmitted at the first data transmission rate and the packet loss indicator value determined from the transmitted packets transmitted at the second different data transmission rate, wherein the selecting includes selecting the third different data transmission rate from a plurality of available data transmission rates, and each of the plurality of available data transmission rates is different from the first data transmission rate and the second different data transmission rate; and

transmitting packets at the third different data transmission rate.

Applicant : Sampath et al.
Serial No. : 10/734,440
Filed : December 11, 2003
Page : 13 of 24

Attorney's Docket No.: MP0389 / 13361-0061001

56.   (Previously Presented) The computer-readable medium of claim 55 wherein the signal quality value is selected from an RSSI (Received Signal Strength Indicator) value, an SNR (signal to noise ratio) value, an SINR (signal to interference noise ratio) value, and a SQM (signal quality measure) value, the SQM value comprising a mean of the SNRs across all of a plurality of tones.

57.   (Previously Presented) The computer-readable medium of claim 55, wherein the packet loss indicator value is selected from a retry counter value, a bit-error update value, a packet error update value, a symbol error update value, and a CRC (Cyclic Redundancy Check) indicator value.

58.   (Canceled)

59.   (Currently amended) The computer-readable medium of claim 55, further comprising:
     generating a confidence value for each of a plurality of available data transmission rates using the signal quality value and the packet loss indicator value.

60.   (Previously Presented) The computer-readable medium of claim 59, further comprising:
     generating an adjustment value for the signal quality value from the packet loss indicator value.

61.   (Previously Presented) The computer-readable medium of claim 60, wherein the signal quality value comprises an RSSI value.

Applicant : Sampath et al.
Serial No. : 10/734,440
Filed : December 11, 2003
Page : 14 of 24

Attorney's Docket No.: MP0389 / 13361-0061001

62. (Previously Presented) The computer-readable medium of claim 61, further comprising:

generating an average received signal strength indicator ($RSSI_{avg}$) value, and

wherein the adjustment value comprises a Δ_{RSSI} value, the Δ_{RSSI} value comprising an adjustment to the $RSSI_{avg}$ value.

63. (Currently amended) The computer-readable medium of claim 62, wherein said generating the confidence value comprises solving the equation:

Confidence[j] = $RSSI_{avg}$ - $RSSI_{TH}$[j] - Δ_{RSSI} ,

where $RSSI_{TH}$[j] comprises a nominal received signal strength value associated with a data transmission rate [j] in a table.

64. (Currently amended) The computer-readable medium of claim 63 wherein said selecting the third different data transmission rate comprises selecting a data transmission rate associated with a positive confidence value.

65. (Currently amended) The computer-readable medium of claim 63, wherein said selecting the third different data transmission rate comprises selecting a data transmission rate associated with a lowest positive confidence value.

66. (Previously Presented) The computer-readable medium of claim 60, further comprising:

updating the adjustment value in response to the packet loss indicator value indicating a maximum failure value corresponding to an excessive number of failed packet transmissions.

Applicant : Sampath et al.   Attorney's Docket No.: MP0389 / 13361-0061001
Serial No. : 10/734,440
Filed   : December 11, 2003
Page   : 15 of 24

67.   (Previously Presented) The computer-readable medium of claim 60, further comprising:

updating the adjustment value in response to the packet loss indicator value indicating a maximum success value corresponding to an excessive number of success packet transmissions.

68.   (Currently amended) The computer-readable medium of claim 55, further comprising:

increasing a transmit power for transmitting packets in response to the selected data transmission rate falling below a first threshold data transmission rate; and

decreasing the transmit power in response to the selected data transmission rate exceeding a second threshold data transmission rate.

69.   (Currently amended) The computer-readable medium of claim 68, wherein the second threshold data transmission rate is greater than the first threshold data transmission rate.

70.   (Currently amended) The computer-readable medium of claim 55, further comprising:

decreasing the selected data transmission rate in response to the packet loss indicator value increasing.

71.   (Currently amended) The computer-readable medium of claim 70, wherein said decreasing comprises decreasing the selected data transmission rate in response to data transmission rate values in a table indexed by available data transmission rates and packet loss indicator values.

Applicant : Sampath et al.
Serial No. : 10/734,440
Filed : December 11, 2003
Page : 16 of 24

Attorney's Docket No.: MP0389 / 13361-0061001

72.   (Currently amended) The computer-readable medium of claim 55, further comprising:

selecting a fourth data <u>transmission </u>rate value directly from the packet loss indicator value in response to the signal quality value falling below a minimum signal quality value.

73.   (Original) The method of claim 1, wherein the transmitted packets and received packets comply with one of the IEEE 802.11 family of specifications.

74.   (Original) The apparatus of claim 19, wherein the packets are transmitted and received in compliance with one of the IEEE 802.11 family of specifications.

75.   (Original) The apparatus of claim 37, wherein the packets are transmitted and received in compliance with one of the IEEE 802.11 family of specifications.

76.   (Previously Presented) The computer-readable medium of claim 55, wherein the transmitted packets and received packets comply with one of the IEEE 802.11 family of specifications.